

**ABSTRACT**

A method of forming  $\text{MgB}_2$  films *in-situ* on a substrate includes the steps of (a) depositing boron onto a surface of the substrate in a deposition zone; (b) moving the substrate into a reaction zone containing pressurized, gaseous magnesium; (c) moving the substrate back into the deposition zone; and (d) repeating steps (a)-(c). In a preferred embodiment of the invention, the substrate is moved into and out of the deposition zone and the reaction zone using a rotatable platen.

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